

usual concave-mirror and substitute a plane, or weak-light mirror when desired.

The advantages afforded by the new arrangement (at cost of but moderate increase in complexity) are the ready availability of the lenses of the supplemental disk or quadrant and their self-centering, so that any lens or combination can be called into use without removing the instrument from the eye; and the addition in practicable form of a full series of cylindrical lenses for ophthalmoscopic work.¹ The increase in cost is not great, and the instrument (as constructed by E. Fox, of 17th and Chestnut Sts., Philadelphia) has proven satisfactory in practice.

ADVANCEMENT OF TENON'S CAPSULE IN STRABISMUS.

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WHEN at our meeting of last year Dr. Holt advocated the correction of higher degrees of convergent squint by a tenotomy of the contracted muscle and a simultaneous advancement of its antagonist, I opposed this plan, because I was—and still am—convinced that the highest degrees of convergence can be corrected by one tenotomy on each internal rectus, and further, because I considered advancement not quite a safe operation in all cases. Visiting the ophthalmic clinics of Berlin and Paris last winter, I was surprised to find that with Schweigger, Hirschberg, Landolt and others, this plan was a subject of ordinary practice. They claim for it that the correction obtainable by it is as certain as with one or two simple tenotomies; moreover, that protrusion of the eyeball and secondary divergence are less likely to occur. Taking further into consideration how pleasant it is to remove

¹ As has been before shown, the disk of cylindrical lenses can easily be added to the Loring and other instruments, the only disadvantage being the concealing of the figures marking the lens at the sight-hole.

the disfigurement in one sitting, and not to be obliged to attack the good eye, we can readily appreciate the advantage of this new plan of operating over the old. Instead of the ordinary advancement, I saw De Wecker and Panas perform the advancement of Tenon's capsule. I have not been able to form a competent judgment of the value of this operation, for that would have required a long observation of a great number of patients thus treated. Nevertheless, I decided to try the procedure, for I knew well enough that the ordinary squint operation had more than one weak point.

The advancement of Tenon's capsule was devised by De Wecker five years ago. He executes it in the following way: A piece of conjunctiva, 5 mm. long and 10 mm. high, is detached from the region of the insertion of the tendon as a centre, leaving a small band near the cornea. Tenon's capsule, now exposed to a great extent, is incised near the insertion of the tendon, and loosened alongside and underneath the muscle. The capsule is then stitched forward by two sutures, entering through the conjunctiva and the capsule at the upper and lower edges of the muscle, and coming out in the conjunctiva above and below the cornea. The greater the piece of capsule which is loosened and stitched forward, the greater the effect. Immediately after the operation there should be some divergence. The sutures are removed the next day, if the effect appear too much, otherwise they are left in place three or four days.

De Wecker uses the capsular advancement for cases of insufficiency, to strengthen the weak muscle, and for high degrees of strabismus, both convergent and divergent.

Since June 5th, of this year, I have performed the capsular advancement in ten cases. The operative procedure has differed from De Wecker's in the majority of the cases. I have left a greater conjunctival flap, undermined it, and stitched the capsule and the folded muscle by a third (middle) suture under the conjunctival flap at the cornea. My intention was to advance the whole anterior portion of the vertically folded muscle and capsule, and, by the sutures passed through it and drawn tight, to produce a plastic inflammation which

through subsequent cicatrization would not only advance but also contract and shorten these parts. In the last case I passed the third suture through the equatorial flap of the conjunctiva, through the tendon (which was held up, drawn forward and folded with a squint-hook) underneath the squint-hook, and through the episcleral tissue and the flap of conjunctiva near the cornea. This procedure is, in reality, an advancement of the tendon without detaching it. If I am not mistaken, I have seen similar operations in Paris, the sutures that advanced the capsule grasping also a portion of the edges of the muscle. The central suture, which I do not remember having seen, may be superfluous, but it is an additional support to hold the tendon and capsule forward, and is likely to assist in securing the desired effect by more extensive formation of cicatricial tissue.

The ten cases in which I performed this operation may be grouped as follows :

Two cases of convergent strabismus, the consequence of old paralysis of the external rectus. In both cases the cornea could not be moved beyond a straight forward position. To increase the effect in these cases, I not only applied the third suture, but after having united it, passed it through the skin of the outer commissure, drawing the globe outward as far as possible. The effect in these two cases was a vast improvement, the eye that had lain almost buried and inert behind the caruncle, could now be approached to a point 4 mm. from the outer commissure, showed a convergence of from 2 to 4 mm., but moved concomitantly with the other eye. The formerly paralyzed external recti had regained a considerable degree of power.

Two cases in which former tenotomies of the internal recti had not removed the strabismus. In the one case, I made a tenotomy of the internal rectus with capsular advancement of its antagonist. The effect was somewhat too large after the removal of the sutures, but gradually diminished, and when last seen the patient had an extensive field of binocular fixation. In the other case, one internal rectus had been divided, by myself, a year previously. The eye had been straight at first, but

gradually fell back into a convergence of 5—6 mm. I advanced the capsule of the external rectus of the same eye without tenotomy of the internal. The eye, three weeks after the operation, was straight most of the time, showing, every now and then, some accommodative convergence, which, however, has diminished during the last week.

Six cases of high degree of convergent strabismus, with considerable amblyopia in the squinting eye. In all of these cases I made a tenotomy of the internal rectus and a capsular advancement of the external. The results in all have been quite good.

In none of the cases was there any alarming reaction, though there was for some weeks redness and swelling of the region of the advanced capsule. At first I used catgut sutures, but one having given way over night I was glad that I had two others to rely upon. Since then I have used silk sutures. The operations have been done with antiseptic precautions, Panas's liquid being used for the sterilizing of the conjunctival sac, the wound, the instruments, and the sutures.

I have preferred this operation to the ordinary advancement, because it is simpler and less risky. The preservation of the natural attachment exposes the muscle less to inflammation, and there can be no undue retraction in the case of a failure.

It results from the foregoing that my limited experience with the advancement of Tenon's capsule has been quite encouraging.

DISCUSSION.

DR. HOLT.—I commenced to advance the rectus in certain forms of strabismus seven or eight years ago. In the first case I operated on, it was practically an advancement of Tenon's capsule, and the result was very satisfactory. I think that the operation of advancement cures nystagmus when it occurs in certain forms of squint; that has been my experience in several cases.

I have performed the operation twenty-seven times, and I have had but one case that gave any trouble, and that came out as well as any case that I have ever had.

DR. HARLAN.—Does Dr. Knapp consider this a safe operation? Five or six years ago, I did the operation in a number

of cases and was much pleased with it, until finally it was followed in one case by pan-ophthalmitis. At that time antiseptic precautions were of course not employed.

DR. KNAPP.—I did not consider it a safe operation one year ago, but since that time my views have considerably changed, as the result of experiments and of increased knowledge concerning the antiseptic treatment of wounds. More traumatic injury to the eyes is borne with impunity, than I would before have ventured to inflict. I think that it will not be possible to exclude suppuration in all operations, but where it occurs we must regard it as the result of infection and not due to the traumatism alone.

A CASE OF TUMOR OF THE LEFT OCCIPITAL LOBE WITH RIGHT HOMONYMOUS HEMIANOPSIA (WITH AUTOPSY).

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IN 1855 Von Graefe pointed out the importance of the examination of the visual field in amblyopic affections, and foretold that the hemiopic visual defects would become important in the study of the intra-cerebral optic paths and centres. Since that time clinical ophthalmology has been cultivating the methods of examining the field of vision. As one of the many beautiful results yielded by this mode of functional examination, we may mention the clinical demonstration of the semi-decussation of the optic nerves in the chiasma.

At the present day the physiologist Munk teaches that the primary visual centres occupy circumscribed regions in the occipital cortex, and that the visual area of each occipital lobe connects with the retinae of both eyes in such a manner that the right half of each retina belongs to the right occiput, and the left half of each retina to the left occiput. But modern physiology, as taught by Goltz, maintains that Munk's views have been derived from insufficient and erroneous observations, and